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ABSTRACT

As an introduction to exploring the possibilities of an inservice plan to facilitate teacher cognitive development, the theories of educational philosophers and developmental psychologists are cited in arriving at a broad definition of the cognitive development of adults. From these theories it is surmised that teachers do operate at different cognitive levels, and that this makes a difference in the classroom. It is pointed out that teachers who function at higher conceptual levels are able to create a greater variety of learning environments using a greater array of teaching models. An overview of research on the cognitive development of teachers is presented, identifying objectives in the affective and behavioral domains that should be considered in developing an effective curriculum for inservice programs. Descriptions are given of some developmental education models that have been implemented in research studies. Factors that have been identified in the literature which are thought to facilitate cognitive development, and should serve as a framework for an inservice program are listed: (1) assessment of developmental levels; (2) extended time formats; (3) seminars and practicums; (4) social role-taking; (5) ongoing supervision; (6) support during disequilibrium; and (7) identification of the desirable end state. Participant experiences should include decision making and evaluation, reflection and integration, shared responsibility and leadership, and empathy. Four pages of references are provided. (JD)

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A RESEARCH-BASED INSERVICE PLAN TO FACILITATE TEACHER COGNITIVE DEVELOPMENT

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A RESEARCH-BASED INSERVICE PLAN TO FACILITATE TEACHER COGNITIVE DEVELOPMENT

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My task here is to present a research-based inservice plan designed to enhance the cognitive development of the teacher. I have decided to approach this task by asking a series of sequential questions regarding teacher cognitive development, terminating in a research-based description of an environment that facilitates the cognitive development of the teacher.

With that orientation I would first like to address the question: **what do we mean by the cognitive development of the inservice teacher?**

For my purposes I have adopted a definition broad enough to include several approaches to cognitive development. This approach includes developmental approaches such as Piaget (Piaget and Inhelder, 1969); taxonomy approaches such as Bloom (Bloom, Krathwohl, and Masia, 1956); and interaction approaches such as Conceptual Systems Theory (Harvey, Hunt and Schroder, 1961). Also included in my broad definition are recent theoretical models (Fischer, 1980; Labouvie-Vief, 1982; Kitchner and King, 1981) that have extended cognitive development into adulthood.

Brabeck (1984) has identified eleven recently developed theories that propose sequential changes in intellectual functioning during adolescence and adulthood. Each of these theories extended beyond Piaget's formal operations. It seems reasonable, therefore, to conclude that there is an acceptance of continued cognitive development

during adulthood. From these theories a second question important to teacher inservice emerges: **do teachers function at different cognitive levels?**

The existence of developmental differences in the cognitive development of adults has been well documented. Tomlinson-Keasey (1972) found 32 percent of college women did not perform at a formal operations level. This percentage jumped to 46 percent for older adult women. Further analysis indicated that only 23 percent of college women and only 17 percent of older women attained the highest stages of formal operations. Bender and Milakofsky (1982) found that 55 percent of college chemistry students were not at a formal operational level. Numerous other authors have concluded that many adults do not function at the highest levels of cognitive development (Oja, 1980; Papalia and Bielby, 1974; Blasi and Hoeffel, 1974).

Using Piagetian tasks, Juraschek (1974) studied 141 preservice teachers in a mathematics class, 19 preservice secondary mathematics teachers, and 11 calculus honors students. Results indicated 52 percent of the preservice elementary teachers were in the concrete operational substages while less than 5 percent of the preservice secondary mathematics teachers and none of the calculus students were in the concrete stages.

Also focusing on elementary education majors, Joyce (1977) studied upperclassmen and found a "sizable minority that had not unequivocally reached the formal stage" (p. 156). The inability to isolate variables, handle proportions, and focus on general principles were identified as constraints to potential success as an elementary school teacher.

Other educational researchers (Joyce, Lamb and Sibol, 1966; Glassberg and Oja, 1981) have divided inservice teachers into concrete and formal or similar groups based on cognitive development as a part of their research design. It seems safe to conclude that inservice teachers function at different cognitive levels.

Teachers function at different cognitive levels; does this make a difference in the classroom?

Glassberg and Oja (1981), referring to the work of several researchers, concluded that "research in the schools showed that teachers at higher stages of development functioned in the classroom at a more complex level " (p. 62). An analysis of specific research studies provides some clarification of behavioral differences among teachers of differing cognitive levels.

Joyce, Lamb and Sibol (1966) explored some of the ways in which teachers possessing concrete vs. abstract conceptual structures handled information about teachers. Their evidence suggested that the conceptual organization of teachers does affect the way they handle information about children. Concrete subjects tended to maintain an initial position, regardless of additional information, whereas abstract subjects took less definite positions initially and became more definite as additional information became available.

Murphy and Brown (1970) related four stages of conceptual thinking to teacher behaviors. Utilizing Harvey's (1966) Conceptual Systems Test, they concluded that the higher the cognitive level of the teacher, the more information the teacher utilizes to help students think divergently, theorize, and engage in self-expression. Rote teacher questions decreased with increased cognitive development.

Hunt and Joyce (1967), in a study of teaching styles, found that teachers at higher conceptual levels were able to create a greater variety of learning environments utilizing a greater array of teaching models. Higher conceptual level teachers were better able to implement the sequence of instructional planning, teaching, and evaluation with empathy for the student.

Bents and Howey (1978) indicate that individuals who function at higher conceptual levels demonstrated "greater behavioral flexibility, a wider spectrum of coping behavior and a greater tolerance for stress" (p. 5). Increased empathy has also been identified as a characteristic of higher cognitive functioning teachers by Kohlberg (1974). Other

characteristics identified as associated with higher levels of thinking include professional ethics, principled thinking, and the ability to function under stress.

I find myself intrigued by the similarities among the environmental conditions that facilitate teacher cognitive development and the conditions necessary for effective schools and classrooms described by Goodlad (1984), Little (1982), and Brophy (1984). While a tendency exists to interpret much of the "effectiveness" literature in terms of specific teacher behaviors and specific outcomes, it does recognize teaching as a complex, cognitive/affective function, performed in a complex environment.

Given, then, that teachers do function at different cognitive levels and that teachers at higher levels of cognitive functioning are more effective teachers, **what type of inservice is needed to enhance teacher cognitive development?**

Few researchers have examined the effectiveness of inservice programs to influence the cognitive development of teachers. One notable attempt has been described by Glassberg and Oja (1981). A curriculum for an inservice teacher education program was developed, based on developmental theory and practice. Objectives developed for the curriculum included the following:

Affective Domain

1. Development of a more complex, differentiated and integrated understanding of self and others
2. Increased cognitive complexity
3. Growth toward principled autonomy
4. Development of more complex ethical reasoning

Behavioral Domain

1. Increased knowledge of educational psychology
2. Development of interpersonal communication skills
3. Development of supervision skills
4. Development of strategies to assume a variety of teaching roles

The inservice involved an intensive six week summer session and weekly meetings during the following fall quarter after the teachers resumed teaching. A series of formal and informal measures were used to assess the ego, moral, and conceptual growth of the 37 experimental subjects and two control groups of 25 and 23 subjects.

The study did indicate growth in some measures of ethical reasoning and conceptual complexity, but it did not influence the general level of ego development. During the summer workshop, increases were also found in the teachers' abilities to identify and empathetically respond to emotions.

Overall, however, the results led Glassberg and Oja to conclude that "it is difficult to create effective developmental experiences for adults." They indicated that adults tend to stabilize at a particular stage of development and avoid significant change, making it difficult to create the dissonance producing experiences or reflections necessary to facilitate cognitive growth.

Martin (1983) utilized a systematic cognitive intervention program with an experimental group of 14 inservice teachers at a school for the deaf. The intervention program was a special content-free, paper and pencil program designed to improve problem solving strategies in 14 cognitive areas, including logical reasoning, analytic perception, and problem solving. The experimental program involved a six-day training course in Instrumental Enrichment over a seven month period.

Martin utilized three separate measures for both experimental and control groups: The Uncritical Inference Test; a specially developed Teacher Self-Rating Scale; and a supervisory evaluation form. No significant differences were found on the Uncritical Inference Test, but differences were noted on the other two measures. Martin cited changes in seven of eight measures classified into categories of (1) improvement of methods for fostering cognitive development in students, and (2) application of higher level cognitive processes to the teaching process.

Martin failed to provide any evaluative data for his self-rating scales or supervisors' rating scale on which his results were based. This, plus limitations acknowledged by Martin, make it difficult to draw implications from the results. However, further investigation of Martin's approach is clearly warranted.

Several attempts have been made to outline developmental teacher inservice conditions that enhance cognitive development (Glassberg, 1979; Wood and Thompson, 1980; McNergney, Francis, Hinson and Stimpfle, 1983; Pickle, 1985). Feiman and Floden (1981) identified three developmental approaches to teacher education: (1) a developmental model of teacher concerns; (2) an approach based on cognitive developmental theories; and (3) a developmental style of inservice. Approaches based on cognitive development consider teacher development based on adult developmental theories with a goal of promoting ego, moral, and conceptual development. Feiman and Floden cite four aspects of inservice intervention usually associated with cognitive approaches: (1) a seminar with practicum; (2) social role-taking; (3) ongoing supervision; and (4) support during disequilibrium. Lack of clarity regarding the resolution of disequilibrium is cited by Feiman and Floden as a key problem in designing intervention strategies. Floden and Feiman (1981) have also characterized the developmental approach as having the following: (1) a focus on an end state; (2) an assumption of universal sequences of change; and (3) an assumption that changes are self-directed. They point out that "the end state chosen should be one that some teachers occasionally reach" and that the desirability of the end state should be ascertained.

Glassberg (1979) describes a developmental education model developed at the University of Minnesota designed to directly influence the cognitive/moral developmental level of the classroom teacher. A curriculum that included role-taking opportunities and created disequilibrium was used to stimulate developmental growth. Experiences that develop responsibility for the welfare of others and create opportunities for moral choices were combined with experiences of reflection and integration to facilitate

movement to higher stages. Glassberg cites the assumption of responsibility in an atmosphere of shared leadership, empathy toward others in making choices, and the regular examination of decisions and relationships as characteristic of the environment created by the model.

Bents and Howey (1978) have proposed a framework for planning inservice delivery based on distinct, but complementary strategies focusing on three goals: (1) the enhancement of adult cognitive, intrapersonal and interpersonal development; (2) the alteration of the school environment to improve teacher effectiveness; and (3) the alteration of teacher behavior. They cite the necessity for a different type of needs assessment for each of the different goals. They indicate that for the goal of enhanced adult cognitive development, the need would be to assess the developmental level of the individuals involved.

Bents and Howey also propose different instructional formats for different instructional goals. For teacher cognitive development, their format includes highly personalized approaches, long periods of time, instruction in cognitive development, and opportunities for introspection and reflection. Other facilitating factors include collaborative, decision-making environments and high relationship, low task, non-threatening leadership.

Bents and Howey's assertion for extended time periods of inservice to enhance cognitive development is supported by Denton and Seymour (1977). Denton and Seymour used a mastery learning paradigm focusing on unit pacing and different remediation strategies to study the acquisition of higher order intellectual skills. While they did not find differences in treatment effects, they did find differences between the experimental and control 6-week groups and the experimental and control 15-week groups. Bents and Howey concluded that "compressing the curriculum experiences into a time period which decreases the number of days, but not the actual class hours devoted

to curricular components, reduces performance with respect to higher order cognitive skills" (p. 10).

The importance of the time duration factor in staff development has been emphasized by Fenstermacher and Berliner (1985). They cite both in importance of systematic and clinical support for inservice recipients and the necessity for sufficient time for comprehension, practice, mastery, and application of content.

Pickle (1985) has recently proposed a three dimensional approach to teacher maturity: professional; personal; and process. The process dimension includes abstract thought, critical thought, and perspective. Pickle's model stresses the necessity for the teacher to develop high levels of cognitive functioning in order to achieve professional maturity.

In summary, several factors have been identified in the literature which are thought to facilitate cognitive development and should be considered for inclusion in an inservice program:

Framework for Inservice

1. Assessment of developmental levels
2. Extended time formats
3. Seminars and practicums
4. Social role-taking
5. Ongoing supervision
6. Support during disequilibrium
7. Identification of the desirable end state

Type of Participant Experiences

1. Decision-making and evaluation
2. Reflection and integration
3. Shared responsibility and leadership
4. Empathy

5. Moral choices

While these characteristics provide a basic structure for a teacher inservice program, there appears to be a basic belief system which must be shared by administrators, teachers, and other professionals functining in the environment. This belief system recognizes the individual and the importance of the individual in the group. There is also a shared commitment and responsibility for the growth of the individuals within the group and the group itself. This belief system appears to be ubiquitous and creates an environment characterized by trust and collegiality.

Additional detail and structure for an inservice program to enhance cognitive development need to consider the specifics of the location. Perhaps it would be appropriate for this to be the task of the individuals participating in the inservice.

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